Alberta Innovates Bio Solutions

2012–13 Annual Report

June 28, 2013

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Alberta Innovates Bio Solutions

Alberta Canada

Alberta Innovates Bio Solutions

ALBERTA INNOVATES - BIO SOLUTIONS
2012–13 Annual Report

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Alberta Innovates Bio Solutions

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Alberta Innovates Bio Solutions

1. EXECUTIVE SUMMARY

Along with its three sister Alberta Innovates corporations, Alberta Innovates - Bio Solutions (AI-Bio) is an integral part of Alberta's research and innovation system. The Alberta Innovates family works collaboratively together and with other partners to further research and innovation in alignment with Government of Alberta priorities. AI-Bio supports innovation at different stages of the innovation spectrum to grow and diversify industries in Alberta's agriculture, food, and forest sectors. Our support enables the discovery of new knowledge, application of that knowledge, and knowledge translation or commercialization in five priority areas of science and innovation: sustainable production, quality food for health, advancing the bioeconomy, ecosystem services, and prion and prion-like neurological diseases.

This document fulfills, in part, our accountability to the Minister of Enterprise and Advanced Education for delivering on the goals and outcomes outlined in our *2012–15 Business Plan*.

Our core business is identifying, coordinating, and funding leading-edge research initiatives. We are always watchful for opportunities that could transform our sectors. If something significant arises, we are able to move quickly and tap into the power of Alberta Innovates, Campus Alberta and the overarching research and innovation system.

In 2012–13, AI-Bio invested $15 million in high-impact opportunities in our priority areas through grants, contracts and facilitation of strategic initiatives and connections, among other business activities. As at March 31, 2013, AI-Bio is managing 166 active projects in an investment portfolio of more than $71 million over the lifetime of the projects. The agreements span a wide array of research in priority areas such as boreal reclamation, nanocrystalline cellulose, livestock genomics, prions, and dietary fibre from peas, beans, or lentils. In the 38 projects that closed in 2012–13, AI-Bio supported the skills development of 292 highly qualified personnel over the life of the projects.

Operationally in 2012–13, AI-Bio renamed one priority theme area: quality food for health is now food innovation. We hired four new staff members, said goodbye to one staff member, and reduced the number of directors on the Board by four as their terms expired.

As a key mechanism to advance innovation in our priority areas, AI-Bio establishes networks and Alberta Innovates centres. This year, we expanded these with efforts to establish new funding agreements for the Biorefining Conversions Network and Livestock Gentec, an Alberta Innovates Centre. Livestock Gentec appointed Dr. Graham Plastow as its new chief executive officer and launched a spinoff company, Delta Genomics. The Alberta Innovates Phytola Centre moved into its new $1.5-million lab in the Agriculture and Forestry Centre at the University of Alberta.

2. ACCOUNTABILITY STATEMENT

Al-Bio's annual report for the year ended March 31, 2013, was prepared under the Board's direction in accordance with the *Alberta Research and Innovation Regulation*, the *Government Accountability Act*, and ministerial guidelines established pursuant to the *Government Accountability Act*. All material economic, environmental, or fiscal implications that we are aware of have been considered in the preparation of this report.

ORIGINAL SIGNED BY:

Art Froehlich
CHAIR

3. MANAGEMENT'S RESPONSIBILITY FOR REPORTING

Al-Bio's management is responsible for the preparation, accuracy, objectivity, and integrity of the information contained in the annual report, including the financial statements, performance results, and supporting management information. Systems of internal control are designed and maintained to produce reliable information that meets reporting requirements, and to ensure that transactions are executed in accordance with all relevant legislation, regulations, and policies, that reliable financial records are maintained, and that assets are properly accounted for and safeguarded.

The annual report has been approved by the Board of Directors and is prepared in accordance with ministerial guidelines.

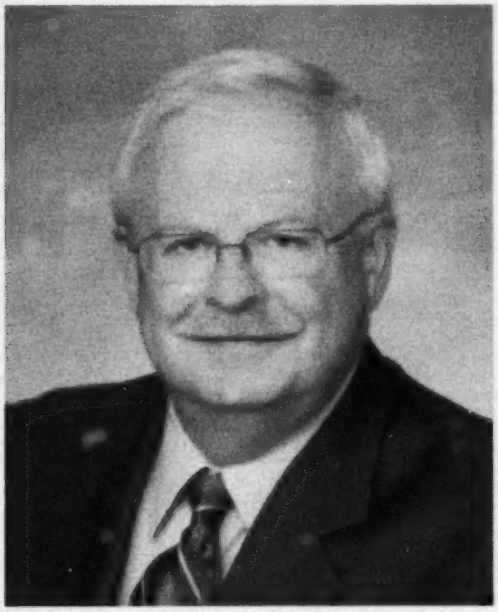
The Auditor General of the Province of Alberta, the corporation's external auditor appointed under the Auditor General Act, performs an annual independent audit of Al-Bio's financial statements in accordance with Canadian auditing standards.

ORIGINAL SIGNED BY:

Stan Blade
CHIEF EXECUTIVE OFFICER

Alberta Innovates Bio Solutions

4. MESSAGE FROM THE BOARD CHAIR



We have a tremendous opportunity to create wealth in Alberta. The opportunities within the energy, manufacturing, forest, and agriculture sectors are extraordinary and give this province the potential to become a world leader in a vast array of areas.

We have the most visionary farmers in the world. Our energy industry has the best engineers and production and manufacturing people. Our forest sector is a global leader in innovation and its commitment to sustainability.

We must get out of our silos, work together, and ensure that our actions benefit the soil, and other natural values, like water. Going forward, we need to combine our strengths to develop this province in a way that is sustainable and economically profitable.

Farmers have always known that you must be innovative to succeed. In farming, there is no one to lean on; you need to seek ways of becoming bigger, faster, and better. You need to find solutions to even the most daunting problems. Your livelihood depends on it.

Al-Bio's work is helping the agriculture, food, and forest industries continue to harness the power of innovation to improve competitiveness, profitability, and sustainability. This year, we invested $15 million in science and innovation in our priority areas to advance and diversify these sectors, all with an eye on doing what's right for people, profit and the planet.

I commend Al-Bio staff and Board members for their commitment and work in 2012–13, and I look forward to the coming year as we continue to build collaboration—with others in the Alberta Innovates group as well as with the broader research and innovation system and our industry partners—and foster innovation in the province.

ORIGINAL SIGNED BY:

Art Froehlich
CHAIR

5. PERFORMANCE MEASUREMENT – REPORTING ON RESULTS

AI-Bio supports the development of new ideas and advancements to help our agriculture, food, and forest industries overcome challenges, become more profitable, and diversify their industries. To achieve these objectives, we support a broad range of research and expertise, increasing our capacity to deliver through our many partnerships and collaborations.

In delivering the *2012–15 Business Plan* over the past year, AI-Bio supported investments within five priority research and innovation areas: sustainable production, advancing the bioeconomy, quality food for health, ecosystem services, and management of prion and prion-like neurological diseases.

Sector leadership was an overarching goal within all priority areas. The following are some of our leadership highlights for 2012–13:

- AI-Bio was involved in developing several food safety-related funding competitions in collaboration with Genome Canada and provided direct support to two Alberta Innovates centres: Phytola and Livestock Gentec.
- AI-Bio was invited to participate in the development of the Alberta Epigenetics Network.
- AI-Bio initiated a symposium at the Canadian Science Policy Conference that focused on food nutrition and the need for appropriate government policy to support food industry success.
- AI-Bio's investment in the University of Alberta and its work in India resulted in a $5.3-million International Development Research Centre grant to the university through the development of partnerships that link the university's expertise to international development needs.
- AI-Bio was an active participant in the development of the Research and Innovation Integration Team that will focus on Alberta research and innovation outcomes with Campus Alberta, Government of Alberta ministries, the Alberta Innovates corporations, and the Alberta Research and Innovation Authority.

Over 2012–13 , AI-Bio developed performance measures on the effectiveness of our investments. We evaluated AI-Bio supported projects, programs or initiatives for which the final report was received by the end of 2012 or which was otherwise considered closed. Using the measures we developed, we assessed our achievement of immediate outputs (results occurring directly due to our influence and support) and immediate outcomes (areas of impact to which we contributed). Below the table in each priority area is a narrative listing of our key achievements in that area, with indication of which long-term outcomes and outputs are supported.

In a number of instances, the achievements reported are the culmination of research programs and collaborations that were initiated in previous years, reflecting the legacy investments brought into AI-Bio when it was formed in 2010.

Goal 1: Sustainable Agriculture, Food, and Forest Production

Long-term Outcomes:

1. Competitive production for a global marketplace.
2. Economically, environmentally and socially sustainable production systems.

Long-term Outputs (by 2015):

3. Contribute to development of market-driven traits and products and/or enhanced production system sustainability.
4. Knowledge translation, business development and commercialization spur economic activity

Results Category	Performance Measure	Actual Results 2012–13
Projects	The number of projects, programs, or initiatives supported by AI-Bio, for which the final report was received by the end of 2012 or which are otherwise considered closed, and which were evaluated for achievement of outputs or outcomes as reported in the table below	11
Immediate Outcomes		
Knowledge that is likely to lead to a new or improved product, process, or service, or improved market access	The number of potential or actual patents, licence agreements, registrations, etc. (e.g., *Registered a new dry-bean cultivar*)	18
Knowledge that is likely to lead to practice change	The number of potential or actual changes in practice	2
Knowledge that resulted in significant new directions in science or innovation	The number of confirmed proofs of concept, new avenues opened for exploration, new memoranda of understanding, etc. (e.g., *Identified 300 organic compounds residing in the soil throughout the growing season of wheat and canola, which may lead to new farming practices and products*)	2
Immediate Outputs		
Number of highly qualified personnel developed through our projects, programs, and initiatives	The number of individuals involved on a project, program, or initiative who are supported by a grant or contract and who are undergraduate students, graduate students, postdoctoral fellows or post-secondary graduates with a diploma or degree	127
Knowledge management that occurred with industry, government, and others	Over the life of a project, program, or initiative, the number of seminars or workshops coordinated, presentations delivered, articles published in non-academic publications, newsletter editions issued, active websites developed, crop walks or tours coordinated, etc., where the audience was from industry, government, or other sectors	579[1]
Knowledge management that occurred with academia	Over the life of a project, program, or initiative, the number of published peer-reviewed papers, abstracts, or book chapters, or scientific conference program or poster presentations, etc., for which the audience was mainly from academia	207

[1] **NOTE:** Large number reflects the closing of a significant seven-year project that incorporated numerous subprojects.

Sustainable Production — Key Achievements in 2012–13

- AI-Bio supported a five-year research project that investigated the possibility of increasing the efficiency of nitrogen fertilizer use by synchronizing its release with its uptake by wheat and canola. This is a key production concern as currently 70 per cent of the fertilizer nitrogen applied to farmland is lost to the soil environment, potentially causing negative impacts. This research showed that several of the organic compounds found within the root zone of these crops can be used to develop nanotechnologies to improve plant uptake of nanofertilizers. (Relevant long-term outcomes and outputs: 1, 2, 3)

- Lentil breeding cultivars were evaluated over one year to select lines with higher production capabilities for Alberta. The results led to the identification and demonstration to pulse growers of lentil cultivars with more desirable traits, including early crop maturity, improved resistance to diseases, and improved drought resistance. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- Dry beans, such as pinto and great northern bean classifications, are highly valuable crops grown in Southern Alberta, being exported to over 100 countries around the world. A rapid darkening trait has reduced seed quality, and hence price, in the export market. A four-year research project supported by AI-Bio resulted in the licensing to industry, Viterra, of an improved dry bean cultivar with a desirable slow darkening trait, which is also high yielding and has improved resistance to white mould disease. With the licence, Viterra can offer to pulse growers the bean cultivar, AAC Tundra, for commercial production in Alberta and Saskatchewan. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- Fertility in lactating dairy cows has declined dramatically over the last 40 years and is a major challenge facing the dairy industry. A four-year project supported by AI-Bio examined new methods of reproductive management and offered practical solutions to this long-term problem, including selective use of progesterone in breeding protocols. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- With funding from AI-Bio and in collaboration with the Alberta Livestock and Meat Agency and The Healthy Embryo Research Network, a five-year project was undertaken to enhance the efficiency of swine production. Genetic markers determined that nutrition, genetics, and environmental factors affect litter birth characteristics. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- A seven-year program funding the Poultry Research Centre was completed during 2012. The program's many achievements focused on improving production efficiencies and on adding value to lower-value poultry products. Some of these achievements included optimizing the protocol for producing omega-3-enriched meat, developing a novel vaccine against avian influenza, isolating proteins for use in edible film (sausage casings) and biodegradable packaging, producing hypoallergenic egg white proteins, and purifying peptides of interest to pharmaceutical companies for possible use in cardiovascular disease prevention. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- A three-year research project generated information to help Alberta pork producers develop more cost-effective feeding regimes for hogs while maintaining taste using dried distillers'

grains with solubles as part of the feed ration. (Relevant long-term outcomes and outputs: 2, 3, 4)

- Clubroot is one of the most difficult challenges facing canola production on the prairies. A two-year study in this area led to the selection and development of clubroot-resistant canola lines, a very important benefit to the agriculture industry. (Relevant long-term outcomes and outputs: 2, 3, 4)

- Launched in 2002, the Agriculture Funding Consortium is a one-window funding portal that consists of 15 agricultural research-funding organizations in Alberta, including AI-Bio. In 2012–13 , AI-Bio selected four projects from the consortium process. The projects focused on nutrient-use efficiency, new corn cultivars for Alberta, increased fertilizer use efficiency, and beneficial uses of agricultural by-products.

- During 2012, AI-Bio continued working on projects funded by the Value Chain Sustainability Program. These projects covered crucial research topics for the sustainable development of the forest sector, such as mountain pine beetle and spruce budworm control through genomics, and the development of environmentally sustainable forest reclamation techniques.

- Projects in the area of sustainable production benefited from a broad range of partners including others in the Alberta Innovates group; the Universities of Alberta, Calgary, Lethbridge, Ottawa, and Guelph; Carleton University; Agriculture and Agri-Food Canada; Alberta Agriculture and Rural Development; Alberta Livestock and Meat Agency; Alberta Crop Industry Development Fund; Alberta Canola Producers Commission; Alberta Pulse Growers Commission; Alberta Milk; Alberta Chicken Producers; Alberta Barley Commission; and the University of Alberta's Poultry Research Centre, Dairy Research Technology Centre, Alberta Innovates Phytola Centre and Livestock Gentec Alberta Innovates Centre.

- As at March 31, 2013, the Sustainable Production team was managing 51 active projects, 30 of which were in the area of market-driven products, and 21 of which were in the area of agriculture and forest sustainability.

Priority Area Two: Advancing the Bioeconomy

Goal 2: New Chemicals, Materials, and Energy from Biomass

Long-term Outcomes:

1. Development of new bioindustrial products and processes.
2. Growth of bioindustrial sector.

Long-term Outputs (by 2015):

3. Five new processes are developed.
4. Five new products are developed.
5. Guidelines for AI-Bio investments are in alignment with BioE strategy.

Results Category	Performance Measure	Actual Results 2012–13
Projects	The number of projects, programs, or initiatives supported by AI-Bio, for which the final report was received by the end of 2012 or which are otherwise considered closed, and which were evaluated for achievement of outputs or outcomes as reported in the table below	5
Immediate Outcomes		
Knowledge that is likely to lead to a new or improved product, process, or service, or improved market access	The number of potential or actual patents, licence agreements, registrations, etc.	3
Knowledge that is likely to lead to practice change	The number of potential or actual changes in practice	1
Knowledge that is likely to lead to policy or regulation change	The number of potential or actual changes in policy or regulation	2
Immediate Outputs		
Number of highly qualified personnel developed through our projects, programs, and initiatives	The number of individuals involved on a project, program, or initiative who are supported by a grant or contract and who are undergraduate students, graduate students, postdoctoral fellows or post-secondary graduates with a diploma or degree	53
Knowledge management that occurred with industry, government, and others	Over the life of a project, program, or initiative, the number of seminars or workshops coordinated, presentations delivered, articles published in non-academic publications, newsletter editions issued, active websites developed, crop walks or tours coordinated, etc., where the audience was from industry, government, or other sectors	263
Knowledge management that occurred with academia	Over the life of a project, program, or initiative, the number of published peer-reviewed papers, abstracts, or book chapters, or scientific conference program or poster presentations, etc., for which the audience was mainly from academia	83

- The Bioindustrial Research and Innovation Program was implemented in 2012. It focused on applied research in three areas: green building materials, components, and technologies; biomaterials based on cellulose, lignin, and hemicellulose; and biocomposites based on natural agriculture or forestry fibres. Six applied research projects have been chosen for funding support.

- An initiative with the Canadian Triticale Biorefinery was completed. It resulted in the development of a new technology for transferring DNA and proteins directly into the nucleus of triticale microspores, allowing for greater precision inserting desired characteristics into the triticale. Three new triticale varieties (Brevis, Sunray and Taza) were developed, which have higher grain yields and better disease resistance. The use of triticale as a platform for starch-based bioproducts was assessed. The research confirms that there are no biological or agronomic constraints to prevent triticale from moving forward as a key bioproduct crop. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- The first phase of the Biorefining Conversions Network (BCN) was launched in 2009 with three years of funding. It was transferred to the AI-Bio portfolio when Alberta Innovates was created in 2010. The BCN was created to help align bioindustrial research and development and facilitate academia, government, and industry partnerships with particular focus on biomass conversion technologies—thermal, chemical, and biological. During the first phase (1.0) of BCN, 17 research projects have been initiated through BCN's efforts to engage the research community resulting in the filing of four patents. Two symposia attracted world-class researchers to the University of Alberta campus. Linkages have been formed with entities such as the California Institute for Food and Agricultural Research and VTT Research (Finland). BCN also participates in the recently launched BioFuelNet, a pan-Canadian network linking the majority of bioindustrial research groups. BCN has a position on the First Green Inc. scientific advisory board, a US$350-million investment fund. Notable uses of BCN funding include a lipid-to-hydrocarbon pilot facility, a program to convert specified risk material from cattle to bioplastics and adhesives, and projects to produce high-value chemicals and fuels from bacteria and yeast. Partners in these projects include the Alberta Livestock and Meat Agency, Western Economic Diversification Canada, Woodbridge, Alberta Innovates - Technology Futures, Alberta Biomaterials Development Centre, and the Lipid Chemistry Group. The next phase, BCN 2.0 has now been initiated in 2012 with AI-Bio's financial support, an industry-led advisory board, and an international science advisory committee. Twelve new projects have been reviewed and accepted. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- A two-year project was completed on the use of barley protein and cellulose as biopolymers. The knowledge resulting from this research can be used to develop novel barley protein and cellulose-based nanofabrics with applications such as wound-dressing materials. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- A five-year project to develop a new wheat cultivar for the ethanol industry in Alberta, supported by AI-Bio, was completed in 2012. The new cultivar, which is now registered, has a much higher starch-to-ethanol conversion ratio along with early maturity, better disease resistance, and wide agronomic adaptability. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- AI-Bio participated in an important initiative to develop international and national standards related to new forest products, including cross-laminated timber, and Canadian Standards

Association standards on sustainable forest management. This work is part of the process to open new opportunities for Alberta's forest industry. (Relevant long-term outcomes and outputs: 1, 2, 3)

- Al-Bio led and completed an initiative to assess where Alberta is at in further diversifying its economy through bioindustrial opportunities and to gather input on how it might move forward. The substantive consultation and research determined that Alberta is uniquely positioned to encourage biological solutions within its strong energy sector. Al-Bio completed a report with recommendations to further build Alberta's bioeconomy. To view the report, visit bio.albertainnovates.ca and search for "Recommendations to Build Alberta's Bioeconomy 2013." (Relevant long-term outcomes and outputs: 1, 2, 5)

- Al-Bio has developed additional collaborative working relationships with ArboraNano, Alberta Environment and Sustainable Resource Development, Alberta forest companies, and the Ecosystem Services Task Force. Al-Bio also leads management of the Bioeconomy Alberta Team.

- As at March 31, 2013, the Advancing the Bioeconomy team was managing 24 active projects, 2 of which were growing the bioindustrial sector, 5 of which were developing new conversion processes and 17 of which were developing new products.

- Activities in support of the Advanced Materials and Chemicals program (AMCP) are funded through a separate grant agreement from Alberta Enterprise and Advanced Education, which is outside of Al-Bio's base grant from this ministry. A separate annual report is submitted to the ministry specific to the AMCP grant agreement. In 2012–13 , Alberta Newsprint received funding under the AMCP. This brings the total program funding to $5 million across four projects. The program aims to stimulate the commercialization of Alberta biomass into bioindustrial products such as personal care products, cosmetics, high-value extracted products, bioplastics and horticultural growth medium.

Alberta Innovates Bio Solutions

Priority Area Three: Quality Food for Health

Goal 3: Healthy Food Products and Effective Food Safety Processes

Long-term Outcomes:

1. Food ingredients and products for improved wellbeing.
2. Reduction of food-borne illnesses.

Long-term Outputs (by 2015):

3. Foods, ingredients and bioactives with marketable attributes designed to positively influence population health.
4. Increased production of safe, quality, healthy food products by Alberta businesses.
5. New technologies, products and processes to control food borne hazards.

Results Category	Performance Measure	Actual Results 2012–13
Projects	The number of projects, programs, or initiatives supported by AI-Bio, for which the final report was received by the end of 2012 or which are otherwise considered closed, and which were evaluated for achievement of outputs or outcomes as reported in the table below	6
Immediate Outcomes		
Knowledge that is likely to lead to a new or improved product, process, or service, or improved market access	The number of potential or actual patents, licence agreements, registrations, etc.	4
Knowledge that resulted in significant new directions in science or innovation	The number of confirmed proofs of concept, new avenues opened for exploration, new memoranda of understanding, etc. (e.g., *Identified 300 organic compounds residing in the soil throughout the growing season of wheat and canola, which may lead to new farming practices and products*)	3
Immediate Outputs		
Number of highly qualified personnel developed through our projects, programs, and initiatives	The number of individuals involved on a project, program, or initiative who are supported by a grant or contract and who are undergraduate students, graduate students, postdoctoral fellows or post-secondary graduates with a diploma or degree	10
Knowledge management that occurred with industry, government, and others	Over the life of a project, program, or initiative, the number of seminars or workshops coordinated, presentations delivered, articles published in non-academic publications, newsletter editions issued, active websites developed, crop walks or tours coordinated, etc., where the audience was from industry, government, or other sectors	64
Knowledge management that occurred with academia	Over the life of a project, program, or initiative, the number of published peer-reviewed papers, abstracts, or book chapters, or scientific conference program or poster presentations, etc., for which the audience was mainly from academia	22

Quality Food for Health — Key Achievements in 2012–13

- Al-Bio supported the completion of a four-year study evaluating pulse crops (peas, faba beans, lentils) as a tool for the treatment of type 2 diabetes. Novel fractions were identified that were derived from pulse seeds and have the potential to help control blood glucose, an important step forward in personal health management. However, consumption of pulses by Canadians is currently very low. New ways of adding pulses to food products was explored, including using pulse flour in pasta products. (Relevant long-term outcomes and outputs: 1, 3, 4)

- A four-year Al-Bio–supported research project resulted in the development of an environmentally friendly method of extraction of phospholipids and phosvitin, a significant benefit to users of this egg component. Phospholipids, which represent 10 per cent of the weight of egg yolks, have broad applications in the pharmaceutical, cosmetic, and food industries either as an emulsifier or as a nutraceutical ingredient. It contains essential ingredients for cell development and brain function. Phosvitin has potential for use in preventing osteoporosis and in improving bone and dental health. (Relevant long-term outcomes and outputs: 1, 3, 4)

- Al-Bio funded a three-year research project on using microparticles of barley protein to improve the absorption into the human body of bioactive compounds such as vitamins, omega-3 fatty acids, and coenzyme Q_{10}. The research allowed the development of a new platform technology for producing these microcapsule molecules from barley protein. The new technology protects the capsule's ingredients during food processing and storage. It also prevents stomach acids from dissolving the capsule ensuring delivery of ingredients to the small intestine increasing absorption into the body. Barley, primarily used for livestock feed, currently sells at about $250 per tonne. If used for capsules, barley could sell for $30,000 per tonne. (Relevant long-term outcomes and outputs: 1, 3, 4)

- Over the last four years, Al-Bio supported a series of research projects to determine the impact of dietary fibre from crops on gastrointestinal microbial communities. Among other important discoveries, the researchers developed a novel intestinal model. This model allows for improved study of the complex interaction between the host and the bacteria harboured within the intestine. Understanding this interaction is critical to developing effective disease mitigation strategies, identifying value-added opportunities for industry, and scientifically validating health claims for food ingredients and products. (Relevant long-term outcomes and outputs: 1, 3, 4)

- Two different hog production systems were evaluated through DNA markers. Through this evaluation, a number of DNA markers were found to be linked to important quality traits such as meat quality, consumer sensory quality, and hog grade. These markers could be incorporated into a selection process for commercial pig-breeding programs and meat quality improvement. (Relevant long-term outcomes and outputs: 1, 3, 4)

- The results from a three-year research project on post-package pasteurization of ready-to-eat meat products will help meat processors in Alberta and Canada. The process was shown to be capable of reducing incidental contamination of pathogenic bacteria, post-packaging, thereby improving food safety in ready-to-eat meats. (Relevant long-term outcomes and outputs: 2, 5)

- Through the Quality Food for Health Research and Innovation program, 13 projects were selected for funding that focus on using the power of science towards better food and better health. (Relevant long-term outcomes and outputs: 1, 3, 4)

- Through the Food Safety Research and Innovation program, eight new food safety projects were selected for funding that will provide long-term benefits to Alberta's agricultural and food systems. (Relevant long-term outcomes and outputs: 2, 5)

- Projects in the area of food innovation benefited from a broad range of partners including others in the Alberta Innovates group; the Universities of Alberta, Calgary, and Lethbridge; Carleton University; Agriculture and Agri-Food Canada; Alberta Agriculture and Rural Development; Alberta Livestock and Meath Agency; Alberta Crop Industry Development Fund; Genome Canada, Genome Alberta, and the Ontario Ministry of Agriculture, Food and Rural Affairs.
- As at March 31, 2013, the Food Innovation team was managing 28 active projects, 6 of which were in the area of food safety and 22 in the area of products and processes for improved wellbeing.

Priority Area Four: Ecosystem Services

Goal 4: Excellence in Environmental Innovation

Long-term Outcomes:

1. Enhanced ecosystem services through market-based approaches.
2. Development of bio-based environmental services.
3. Documentation of environmental integrity.

Long-term Outputs (by 2015, Alberta has):

4. The necessary scientific, biophysical and socio-economic knowledge related to ecosystem services is in place.
5. The institutional capacity to enable the enhancement of ecosystem services using market based instruments; and the provision of biological and environmental solutions.
6. Credible, open data and information exchange to facilitate timely, transparent knowledge transfer, and to support verification and validation.
7. New ventures and businesses opportunities associated with the provision of environmental services and the enhancement of ecosystem services.
8. Meaningful documented improvements to ecosystem services.
9. Realized meaningful reductions in greenhouse gases through biological management processes.

Results Category	Performance Measure	Actual Results 2012–13
Projects	The number of projects, programs, or initiatives supported by AI-Bio, for which the final report was received by the end of 2012 or which are otherwise considered closed, and which were evaluated for achievement of outputs or outcomes as reported in the table below	2[1]
Immediate Outcomes		
Knowledge that is likely to lead to a new or improved product, process, or service, or improved market access	The number of potential or actual patents, licence agreements, registrations, etc.	3
Knowledge that is likely to lead to practice change	The number of potential or actual changes in practice	4
Knowledge that is likely to lead to policy or regulation change	The number of potential or actual changes in policy or regulation	2
Knowledge that resulted in significant new directions in science or innovation	The number of confirmed proofs of concept, new avenues opened for exploration, new memoranda of understanding, etc. (e.g., *Identified 300 organic compounds residing in the soil throughout the growing season of wheat and canola, which may lead to new farming practices and products*)	1
Immediate Outputs		
Knowledge management that occurred with industry, government, and others	Over the life of a project, program, or initiative, the number of seminars or workshops coordinated, presentations delivered, articles published in non-academic publications, newsletter editions issued, active websites developed, crop walks or tours coordinated, etc., where the audience was from industry, government, or other sectors	10
Knowledge management that occurred with academia	Over the life of a project, program, or initiative, the number of published peer-reviewed papers, abstracts, or book chapters, or scientific conference program or poster presentations, etc., for which the audience was mainly from academia	3

[1] **NOTE:** Data for the ecosystem services business line, which is new, reflects its first year of activity.

Ecosystem Services — Key Achievements in 2012–13

- Working with the Alberta Livestock and Meat Agency, AI-Bio funded the Alberta Biodiversity Monitoring Institute (ABMI) as the scientific network coordinator to develop an ecosystem services assessment over the next three years. This strategic initiative will demonstrate specific applications of new ecosystem services knowledge, including credible, unbiased scorecards of environmental performance. It will inform market approaches by defining stewardship units (credits) associated with various ecosystems. (Relevant long-term outcomes and outputs: 1, 2, 3, 4, 5, 8)

- A proof of concept was funded to inform the development of locally based solutions to reduce the economic impact of large carnivores on ranching operations, minimize conflict between livestock and carnivores, and reduce the loss of carnivores. Project collaborators include the Waterton Biosphere Reserve Association, Alberta Environment and Sustainable Resource Development, the University of Alberta, the University of Montana, and local communities and municipalities. (Relevant long-term outcomes and outputs: 1, 2, 3, 4)

- A proof of concept focusing on land disturbance, restoration, and ecosystem services was developed with Silvacom Ltd., the Oil Sands Leadership Initiative, ABMI, Alberta Innovates - Technology Futures, and other stakeholders. The purpose of the initiative is to understand the processes, data, and information required to offset land disturbance through reclamation, biodiversity offsets, and other instruments. (Relevant long-term outcomes and outputs: 1, 2, 3, 4, 5, 6, 7)

- The BioResource Information Management System (BRIMS), phase 1, was completed by Silvacom Ltd. and Green Analytics, working with the Agriculture Financial Services Corporation and industrial stakeholders. The concept of phase 1 of BRIMS is to integrate various biomass data from across Alberta's public and private lands. This is a key step in understanding the current state of private and public data and information available on bioresources in Alberta. The final report has been completed, and a proposal for phase 2 has been developed. (Relevant long-term outcomes and outputs: 1, 2, 3, 4, 5, 6, 7)

- With funding from the Climate Change and Emissions Management (CCEMC) Corporation and in collaboration with AI-Bio, the Biological Greenhouse Gas Management Program was launched. Gap and opportunity analyses were completed. The results guided the decision framework for work planning and recommendations for investments. Four projects have subsequently been launched that hold great potential to reduce emissions using biological approaches. The first project, the Farming 4R Land project led by the Canadian Fertilizer Institute, will give farmers access to science-based information about how to reduce greenhouse gas emissions when they apply fertilizer or other crop nutrients on their fields. The second project led by the University of Calgary will use filters containing naturally occurring microbes that live on methane gas to reduce low-volume methane emissions at oil and gas field sites, landfills and livestock feedlots/sludge lagoons. The third project led by the University of Calgary will create a new type of biochar from aspen wood logging residue to support water remediation in the oil sands. The fourth project led by the Prasino Group validates two offset protocols in the agriculture industry. (Relevant long-term outcomes and outputs: 1, 2, 3, 9)

- As at March 31, 2013, the Ecosystem Services team was managing 19 active projects, 5 of which were in the area of ecosystem services, 8 of which were in the area of biobased environmental services and 6 of which were in the area of environmental integrity.

Priority Area Five: Prion and Prion-Like Neurological Diseases

Goal 5: Effective Management of Prion and Prion-Like Neurological Diseases

Long-Term Outcomes

1. Robust Canadian livestock markets.
2. Reduced risk management costs of prion diseases in livestock industries and wild cervid management.
3. Research leadership in prion and human neurodegenerative diseases.

Long-Term Outputs (by 2015):

4. Twenty-five new grants in basic and applied research.
5. New national and international research collaborations are stimulated.
6. Research in industry and industry-university collaborative research is supported.
7. Program to expose trainees to the processes and use of science in industry and policy.

Results Category	Performance Measure	Actual Results 2012–13
Projects	The number of projects, programs, or initiatives supported by AI-Bio, for which the final report was received by the end of 2012 or which are otherwise considered closed, and which were evaluated for achievement of outputs or outcomes as reported in the table below	14
Immediate Outcomes		
Knowledge that is likely to lead to a new or improved product, process, or service, or improved market access	The number of potential or actual patents, licence agreements, registrations, etc.	1
Knowledge that is likely to lead to practice change	The number of potential or actual changes in practice	3
Knowledge that is likely to lead to policy or regulation change	The number of potential or actual changes in policy or regulation	1
Immediate Outputs		
Number of highly qualified personnel developed through our projects, programs, and initiatives	The number of individuals involved on a project, program, or initiative who are supported by a grant or contract and who are undergraduate students, graduate students, postdoctoral fellows or post-secondary graduates with a diploma or degree	102
Knowledge management that occurred with industry, government, and others	Over the life of a project, program, or initiative, the number of seminars or workshops coordinated, presentations delivered, articles published in non-academic publications, newsletter editions issued, active websites developed, crop walks or tours coordinated, etc., where the audience was from industry, government, or other sectors	96
Knowledge management that occurred with academia	Over the life of a project, program, or initiative, the number of published peer-reviewed papers, abstracts, or book chapters, or scientific conference program or poster presentations, etc., for which the audience was mainly from academia	187

- Through collaborative research, a method was developed to destroy prions in substances like the specified risk material that is removed from cattle after slaughter. The method involves treating the material with ozone. This treatment approach could serve as the basis for new technology development and could lead to reduced risk in disposal of or new uses for specified risk material. This would add value in the beef supply chain. (Relevant long-term outcomes and outputs: 1, 2, 5)

- AI-Bio-supported research discovered a new approach to reduce the infectiousness of prions in specified risk material using specialized bacteria during composting processes. This approach could serve as the basis for a technological service or a new, simple kit for use on farms. (Relevant long-term outcomes and outputs: 2, 5)

- Research funded by AI-Bio uncovered conditions under which prions can assume slightly different shapes in the brain. These findings increase the understanding of how strains develop in different animals and help us assess the risks of prions jumping from one species to another. (Relevant long-term outcomes and outputs: 1, 2, 5)

- A study was completed on how a large number of existing and newly made compounds interact with prions. With additional modifications, a few of these compounds could serve as bases for detecting prions or in treatments to slow or stop the spread of prion disease in animals. (Relevant long-term outcomes and outputs: 2, 5)

- Researchers learned how the density of populations of mule deer could influence the best ways to reduce the spreading of chronic wasting disease. This information could help policy-makers develop better management plans for chronic wasting disease in wild deer. (Relevant long-term outcomes and outputs: 2, 5)

- During 2012–13, five new funding programs were launched that selected 26 projects for funding. The Alberta Prion Research Institute (APRI) Explorations program selected 14 projects that were directly related to prion diseases and human neurodegenerative diseases and dementias where the etiology involves protein misfolding and the pathogenesis has prion-like characteristics. The APRI Research Team Grant program selected six projects to encourage collaboration within Alberta and between Alberta investigators and researchers in institutions outside of Alberta. The ARPI International Young Researcher Prize selected one recipient who is the principal author of a research paper that is considered to have innovative findings and expected to have great impact on the field of prion or prion-like protein misfolding science. The APRI *IDeal* Program accepts applications at any time and has not yet funded a project. The program encourages collaboration among industry and Alberta universities and research organizations for projects of an applied nature and that are directed at a specific challenge identified by the private sector partner. The APRI Alberta Alzheimer's Research Program selected five projects that directly related to Alzheimer disease in areas related to understanding the fundamental mechanisms of the disease and improving the quality of life of those with Alzheimer disease. (Relevant long-term outcomes and outputs: 1, 2, 3, 4, 5, 6, 7)

- Partners in these various research activities included the Universities of Alberta and Lethbridge, Agriculture and Agri-Food Canada, the Canadian Food Inspection Agency, the Government of Saskatchewan, ChemRoutes Corporation, Alberta Agriculture and Rural Development, PrioNet Canada, Alberta Livestock and Meat Agency, Alberta Innovates – Technology Futures (NanoWorks), and the Alzheimer Society of Alberta and Northwest Territories.

- As at March 31, 2013, the Prion team was managing 44 active projects, 12 of which were in the area of reduced risk management costs of prion diseases, 28 of which were in the area of research leadership in prion and human neurodegenerative diseases, and 4 of which were in the area of robust Canadian livestock markets.

- All activities in Priority Area Five: Prion and Prion-like Neurological Diseases operates under the name of Alberta Prion Research Institute. This priority area is funded through a separate grant agreement from Alberta Enterprise and Advanced Education and is outside of AI-Bio's base grant from this ministry. A separate annual report is submitted to the ministry specific to the prion research grant agreement.

Alberta Innovates Bio Solutions

6. MANAGEMENT'S DISCUSSION AND ANALYSIS (MD&A)

The results presented in AI-Bio's audited financial statements are shaped by our mandate from the Government of Alberta: to provide leadership and coordination for research and innovation that supports the growth and diversification of Alberta's agriculture, forest, and related life science sectors. In our third full year of operation, we have been guided by the wide-ranging expertise of our Board to allocate research funding in our priority areas of sustainable production, quality food for health, agriculture, food, and forest sectors represent a remarkable economic engine that will continue to grow in the face of global interest in food security, green technology, environmental sustainability, water scarcity, and healthy societies.

In the 2013 Financial Statements, the Statement of Financial Position shows net assets of $12.5 million and cash and cash equivalents of $19.6 million, which includes $2.4 million in cash for the Alberta Prion Research Institute. Cash has increased by $6.4 million primarily due to the grant of $4.4 million of funds for Alberta Prion Research Institute and $3 million for the Advanced Materials and Chemicals program (AMCP). Because we are able to retain resources into other fiscal years, we can plan for longer-term opportunities in our areas of focus. The $2.7 million increase in unearned revenue is primarily due to the AMCP and Alberta Livestock and Meat Agency grants from the Government of Alberta.

The $13.2 million increase in contractual obligations reflects the fact that programs are moving forward advancing the bioeconomy, ecosystem services, and prion and prion-like neurological diseases.

We have been able to establish valuable partnerships with provincial, national, and international agencies that align with our interests and the needs of our stakeholders. We have been careful stewards of the resources of our shareholder, leveraging funding from industry, government, and Alberta Innovates partners. Alberta's $25-billion and a significant number of new projects were started in 2012–13. We intend to continue to make significant investments to create an environment where the agriculture, food, and forest sectors will remain both profitable and competitive into the future.

In the 2013 Statement of Operations, revenues of $20.1 million exceeded $16.6 million in expenses resulting in a positive net operating result of $3.5 million. Revenues were lower than budget primarily due to restricted grants that were not recognized as revenue due to project delays. The lower revenue was partially offset by higher other revenue from CCEMC and from increased investment income of $31,000 from the Consolidated Cash Investment Trust Fund. Expenses were lower than budget due to lower than anticipated grant spending. Staff has worked with the board to establish strategic priority areas that has led to new programs, some of which are being implemented in 2012–13 and some are deferred to 2013-14.

7. OPERATIONAL OVERVIEW

Alberta Innovates is the province's only group of organizations with a pan-Alberta legislative mandate to fund and perform research, innovation, and commercialization in multiple sectors. The Alberta Innovates group work together collaboratively and with other partners to further research and innovation in Alberta in alignment with the Government of Alberta priorities: investing in families and communities, securing Alberta's economic future, and advancing world-leading resource stewardship.

AI-Bio supports innovation at different stages of the innovation spectrum to grow and diversify industries in Alberta's agriculture, food, and forest sectors. This spectrum of activities ranges from discovering new knowledge to applying that knowledge and translating or commercializing it in five priority areas of science and innovation: sustainable production, quality food for health, advancing the bioeconomy, ecosystem services, and prion and prion-like neurological diseases. At the end of 2012–13, AI-Bio renamed one priority area, changing it from Quality Food for Health to Food Innovation for improved clarity of purpose.

Strategic collaboration is one cornerstone of AI-Bio's operations. Connections and relationships enhance our ability to build on each other's strengths, leverage resources, and avoid duplication. We routinely seek partners with expertise and capacity to deliver results. Each business line within AI-Bio works with its partners in different ways.

Three of the Alberta Innovates corporations report to the same minister as Alberta's post-secondary research institutions, and economic development, employment and immigration organizations, enhancing alignment and collaboration on many levels. While the Alberta Innovates corporations are assigned responsibility for advancing research and innovation in particular sectors, AI-Bio partners with its Alberta Innovates colleagues when there are areas of common interest, such as water, food, bioproducts, greenhouse gas mitigation, land reclamation, ecosystem services, and health.

The Alberta Innovates corporations are working together to collectively develop common metrics assessing the value our organizations create. Through this effort we are: defining and building a common language; standardizing activity definitions; and, demonstrating how the outcomes we achieve directly contribute to a broadened economic base, effective resource and environmental management, and resilient and healthy communities. AI-Bio is committed to supporting this initiative as a way to more accurately measure the value created by the organizations collectively, and ultimately enhance the effectiveness of the Alberta Innovates system.

To further refine our accountability processes, AI-Bio completed a facilitated process to identify key business processes, evaluate options for improvement, and develop performance measures. A draft handbook of business processes has been completed and AI-Bio's performance measures are included in this document in the section "Reporting on Results."

As at March 31, 2013, AI-Bio is managing 166 active projects focused on providing the knowledge, tools, and technologies to support agriculture, food, and forest industries in Alberta. This investment portfolio of more than $71 million over the lifetime of our active projects spans a wide array of research in priority areas. Projects range from boreal reclamation to nanocrystalline cellulose to livestock genomics to prions to dietary fibre from peas, beans, or lentils.

While we continually invest in leading-edge research and innovation, we are always watchful for opportunities that could transform our sectors. If something significant arises, we are able to move quickly and tap into the power of Alberta Innovates, Campus Alberta and the overarching research and innovation system.

AI-Bio has followed the guidance provided by Premier Redford and the Government of Alberta on appropriate policies and procedures for transparency in reporting expenses for both its Board and senior management. AI-Bio now publicly discloses travel, hospitality, and working session expenses for Board members and executive team members in accordance with the Government of Alberta policy on public disclosure of travel, meal, and hospitality expense.

Alberta Innovates Bio Solutions

Over the last year, we have had several changes in staffing. New staff are Mitch Andrew, program specialist, Sustainable Production Division; Laurie Vaughan-Evans, manager of Project Development and Compliance, Biological Greenhouse Gas Management; Cindy Lieu, manager of Communications, Alberta Prion Research Institute; and Elisa Valade, administrative assistant. Rebecca Bruce has left our organization. We also said goodbye to four Board members whose terms had expired: Bruce German, Doug MacKenzie, Jack Saddler, and John Webb.

The networks and Alberta Innovates centres supported by AI-Bio are key mechanisms to advance innovation in our priority areas. They expanded in 2012–13 in several areas:

- **Biorefining Conversions Network**
  The first three-year term of the Biorefining Conversions Network (BCN) ended in March 2012. During this period, significant advances were made in research focused on thermal, mechanical, and biological conversions of Alberta agriculture and forestry biomass. In April 2012, a new agreement was put in place to continue to explore biomass-based opportunities in Alberta. Under the guidance of a new Strategic Advisory Board and supported through a new Science Committee, BCN researchers are in the process of defining new research projects that will take the network to a powerful new level of activity.

- **Alberta Innovates Phytola Centre and Livestock Gentec**
  During 2012–13, the science and operations continued to grow of both Livestock Gentec and Phytola, two Alberta Innovates centres for research and commercialization supported by AI-Bio. AI-Bio's contribution enabled graduate student training, progress or completion of research projects, knowledge translation/liaison with industry and commercialization activities. Each $1.00 of Phytola Centre funding has secured leveraged investment of $3.50 from industry, granting agencies, and institutions. This excludes Canada Research Chair funding that is valued at $1.4 million over seven years. Similarly, AI-Bio's contribution to Livestock Gentec has enabled this centre to attract $42 million in additional funding for research and innovation projects.

Alberta Innovates Bio Solutions

8. AUDITED FINANCIAL STATEMENTS

ALBERTA INNOVATES – BIO SOLUTIONS

FINANCIAL STATEMENTS

MARCH 31, 2013

Statement of Financial Position

Statement of Operations

Statement of Cash Flows

Notes to the Financial Statements

Schedule 1 – Expenses Directly Incurred Detailed by Object

Schedule 2 – Executive Compensation

Schedule 3 – Related Party Transactions

Schedule 4 – Allocated Costs

AUDITOR GENERAL *Alberta*

Independent Auditor's Report

To the Board of Directors of Alberta Innovates—Bio Solutions

Report on the Financial Statements

I have audited the accompanying financial statements of Alberta Innovates—Bio Solutions, which comprise the statement of financial position as at March 31, 2013, and the statements of operations and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of Alberta Innovates—Bio Solutions as at March 31, 2013, and the results of its operations, its remeasurement gains and losses, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

ORIGINAL SIGNED BY: Merwan N. Saher, FCA

Auditor General

June 4, 2013

Edmonton, Alberta

ALBERTA INNOVATES - BIO SOLUTIONS
STATEMENT OF FINANCIAL POSITION
AS AT MARCH 31, 2013

	2013	2012
	(in thousands)	
Assets		
Cash and Cash Equivalents (Note 3)	$ 19,619	$ 13,262
Accounts Receivable	517	1,401
	$ 20,136	$ 14,663
Liabilities		
Accounts Payable and Accrued Liabilities	$ 795	$ 1,467
Deferred Revenue (Note 4)	6,886	4,212
	7,681	5,679
Net Assets		
Net Assets at Beginning of Year	8,984	6,437
Net Operating Results	3,471	2,547
Net Assets at End of Year	12,455	8,984
	$ 20,136	$ 14,663

Contractual obligations (Note 6).

The accompanying notes and schedules are part of these financial statements.

Approved by the Board of Directors:

ORIGINAL SIGNED BY BRIAN HESJE

Director — June 4, 2013 Date

ORIGINAL SIGNED BY ART FROEHLICH

Director — June 4, 2013 Date

ALBERTA INNOVATES - BIO SOLUTIONS
STATEMENT OF OPERATIONS
FOR THE YEAR ENDED MARCH 31, 2013

	2013 Budget	2013 Actual	2012 Actual
		(in thousands)	
Revenues			
Government of Alberta Grants	$ 21,142	$ 18,813	$ 20,194
Investment Income	200	263	232
Other Revenue	830	1,028	626
	22,172	20,104	21,052
Expenses - Directly Incurred (Note 2(b), Schedules 1 and 4)			
Administration	1,900	1,668	1,803
Prion & Protein Misfolding Diseases	5,845	5,300	5,602
Sustainable Production	3,560	2,634	3,583
Advancing the Bioeconomy	5,123	3,858	3,989
Quality Food for Health	2,001	1,203	1,669
Ecosystem Services	3,226	1,970	1,859
New Investments	6,887	-	-
	28,542	16,633	18,505
Net Operating Results	$ (6,370)	$ 3,471	$ 2,547

The accompanying notes and schedules are part of these financial statements.

ALBERTA INNOVATES - BIO SOLUTIONS
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED MARCH 31, 2013

	2013	2012
	(in thousands)	
Operating Transactions		
Net Operating Results	$ 3,471	$ 2,547
(Increase) Decrease in Accounts Receivable	884	(1,232)
Increase (Decrease) in Accounts Payable and Accrued Liabilities	(672)	732
Increase (Decrease) in Deferred Revenue	2,674	(3,566)
Cash Provided by (Applied to) Operating Transactions	6,357	(1,519)
Increase (Decrease) in Cash and Cash Equivalents	6,357	(1,519)
Cash and Cash Equivalents, Beginning of Year	13,262	14,781
Cash and Cash Equivalents, End of Year	$ 19,619	$ 13,262

The accompanying notes and schedules are part of these financial statements.

ALBERTA INNOVATES – BIO SOLUTIONS
NOTES TO THE FINANCIAL STATEMENTS
MARCH 31, 2013

NOTE 1 AUTHORITY AND PURPOSE

Alberta Innovates – Bio Solutions (the Corporation) is a Provincial Corporation, as defined in the *Financial Administration Act*, that was established on January 1, 2010 and operates under the authority of the *Alberta Research and Innovation Act*. The objectives of the Corporation are to support, for the economic and social well-being of Albertans, bio-industries research and innovation activities aligned to meet Government of Alberta priorities, including, without limitation, activities directed at the development and growth of the bio-industries sector, the discovery of new knowledge and the application of that knowledge.

The Corporation is exempt from Canadian federal and Alberta provincial income taxes.

NOTE 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES

These financial statements are prepared in accordance with Canadian Public Sector Accounting Standards.

The measurement of certain assets and liabilities is contingent upon future events; therefore, the preparation of these financial statements requires the use of estimates, which may vary from actual results. Management uses judgment to determine such estimates. In management's opinion, the resulting estimates are within reasonable limits of materiality and are in accordance with the significant accounting policies summarized below.

a) Revenue accounting policy

All revenues are reported on the accrual basis of accounting. Cash received for which goods or services have not been provided by year end is recorded as deferred revenue.

Government Transfers

Transfers from the Government of Alberta, federal and other governments are referred to as government transfers. The Corporation adopted PS 3410 – Government Transfers effective April 1, 2012. There was no impact to the Corporation.

Government transfers and the associated externally restricted investment income are recorded as deferred revenue if the terms for use of the transfer, or the terms along with the Corporation's actions and communications as to the use of the transfer, create a liability. These transfers are recognized as revenue as the terms are met and, when applicable, the Corporation complies with its communicated use of the transfer.

All other government transfers, without terms for the use of the transfer, are recorded as revenue when the Corporation is eligible to receive the funds.

NOTE 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Cont'd)

Other Revenue

Contract revenue is recognized using the percentage of completion method. The Corporation makes full provision for all known or estimated losses on uncompleted contracts as soon as they can reasonably be estimated.

Investment Income

Investment income is recorded on the accrual basis where there is reasonable assurance as to its measurement and collection. Gains and losses arising from disposals of investments are included in the determination of investment income.

b) Expenses

Directly incurred expenses are costs the Corporation has primary responsibility and accountability for. In addition to operating expenses such as salaries and supplies, directly incurred expenses also include:

- Pension costs which comprise of the cost of employer contributions for current service of employees during the year.
- Valuation adjustments representing the change in management's estimate of future payments arising from obligations relating to vacation pay.

Grants are recognized as expenses when authorized, and eligibility criteria, if any, are met.

Services contributed by other entities in support of the Corporation's operations have not been recorded in the financial statements and are disclosed in Schedule 4.

c) Assets

Financial assets are assets that could be used to discharge existing liabilities or finance future operations and are not for consumption in the normal course of operations. Financial assets of the Corporation are limited to financial claims, such as advances to and receivables from other organizations, employees and other individuals. The Corporation adopted PS 3450 – Financial Instruments effective April 1, 2012. The Corporation does not have any transactions involving financial instruments that are classified in the fair value category and has no foreign currency transactions. Consequently, there are no remeasurement gains and losses and a statement of remeasurement gains and losses has not been presented.

d) Net Assets

Net assets represent the difference between the carrying value of assets held by the Corporation and its liabilities.

Canadian Public Sector Accounting Standards require a "net debt" presentation for the statement of financial position in the summary financial statements of

NOTE 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES (Cont'd)

governments. Net debt presentation reports the difference between financial assets and liabilities as "net debt" or "net financial assets" as an indicator of the future revenues required to pay for past transactions and events. The Corporation operates within the government reporting entity, and does not finance all its expenditures by independently raising revenues. Accordingly, these financial statements do not report a net debt indicator.

e) Liabilities

Liabilities are recorded to the extent that they represent present obligations as a result of events and transactions occurring prior to the end of fiscal year. The settlement of liabilities will result in sacrifice of economic benefits in the future.

NOTE 3 CASH AND CASH EQUIVALENTS
(in thousands)

Cash and Cash Equivalents in the amount of $19,619 (2012 - $13,262) include deposits in the Consolidated Cash Investment Trust Fund (CCITF) of the Province of Alberta. The CCITF is administered by the Ministry of Treasury Board and Finance with the objective of providing competitive interest income to depositors while maintaining appropriate security and liquidity of depositors' capital.

The portfolio is comprised of high-quality short-term and mid-term fixed-income securities with a maximum to maturity of three years. As at March 31, 2013, securities held by the Corporation had a time-weighted return of 1.3% per annum (2012: 1.3% per annum). Due to the short-term nature of CCITF investments, the carrying value approximates fair value.

NOTE 4 DEFERRED REVENUE
(in thousands)

Deferred revenue represents unexpended, externally restricted funds.

	2013			2012
	Prion Research	BIO Other	Total	Total
Balance, beginning of year	$ 2,329	$ 1,883	$ 4,212	$ 7,778
Contributions received	4,914	3,945	8,859	3,125
Investment Income	54	-	54	73
Recognized as Revenue				
Investment Income	(54)	-	(54)	(73)
Grants from Government of Alberta	(4,759)	(1,301)	(6,060)	(6,691)
Grants from Other Sources	(125)	-	(125)	-
Balance, end of year	$ 2,359	$ 4,527	$ 6,886	$ 4,212

NOTE 5 BENEFIT PLANS
(in thousands)

The Corporation participates in the multi-employer pension plans: Management Employees Pension Plan (MEPP), the Public Service Pension Plan (PSPP), as well as, a Supplementary Pension Plan (SRP) for Public Service Managers. The Corporation does not have sufficient plan information on MEPP, PSPP or the SRP to follow the standards for defined benefit accounting and therefore follows the standard for defined contribution accounting. Accordingly the pension expense for these pension plans is equivalent to the annual contributions of $348 (2012 - $312). The Corporation is not responsible for future funding of the plan deficit other than through contribution increases.

The deficits reported below represent the unfunded position of the plans as a whole and not the Corporation's share:

	December 31, 2012	December 31, 2011
Management Employees Pension Plan (MEPP)	$ 303,423	$ 517,726
Public Service Pension Plan (PSPP)	$ 1,645,141	$ 1,790,383
Supplementary Pension Plan – Public Service Managers (SRP)	$ 51,870	$ 53,489

NOTE 6 CONTRACTUAL OBLIGATIONS
(in thousands)

Contractual obligations are obligations of the Corporation to others that will become liabilities in the future when the terms of those contracts or agreements are met.

	2013	2012
Obligations under Contracts and Grants	$ 19,781	$ 6,613

Estimated payment requirements for each of the next four years are as follows:

	Contracts	Grants	Total
2013-14	$ 659	$ 10,358	$ 11,017
2014-15	284	6,731	7,015
2015-16	30	1,450	1,480
2016-17	-	269	269
	$ 973	$ 18,808	$ 19,781

NOTE 7 APPROVAL OF FINANCIAL STATEMENTS

These financial statements were approved by the Board of Directors.

ALBERTA INNOVATES - BIO SOLUTIONS
FOR THE YEAR ENDED MARCH 31, 2013

Schedule 1 - Expenses Directly Incurred Detailed by Object

	2013		2012
	Budget	Actual	Actual
	(in thousands)		
Grants	$ 14,888	$ 11,259	$ 13,401
Salaries, Wages & Employee Benefits	3,435	2,906	2,491
Supplies and Services	2,832	2,373	2,499
Financial Transactions and Other	7,387	95	114
	$ 28,542	$ 16,633	$ 18,505

Schedule 2 - Executive Compensation

	2013				2012
	Base Salary [1]	Other Cash Benefits [2]	Other Non-Cash Benefits [3]	Total	Total
	(in thousands)				
Chairman of the Board	$ -	$ 40	$ 2	$ 42	$ 42
Board Members	-	45	1	$ 46	37
Chief Executive Officer	239	7	76	$ 322	293
Executives:					
Executive Director, Ecosystem Services	168	-	50	$ 218	210
Executive Director, Sustainable Production & Food Innovation [5]	178	-	53	$ 231	223
Executive Director, Prion [4][6]	168	-	-	$ 168	166
Executive Director, Advancing the Bioeconomy	160	-	48	$ 208	187
Executive Director, GHG Management Program	195	-	5	$ 200	53
Director, Operations	112	-	34	$ 146	132

Prepared in accordance with Treasury Board Directive 12/98 as amended.

(1) Base salary includes pensionable base pay.

(2) Other cash benefits include honoraria for Board Members and car allowance for Chief Executive Officer. No bonuses were paid in 2013 or 2012.

(3) Other non-cash benefits include employee benefits and contributions or payments made on behalf of employees including pension and supplementary retirement plan, health care, dental coverage, group life insurance, short and long term disability plans, Workers Compensation Board premiums, accomodations, learning account items, health spending account items and professional memberships.

(4) Base compensation is estabished through contractual agreement. No other cash or non cash benefits are provided.

(5) Title was previously 'Sustainable Production'.

(6) Title was previously 'Prion and Protein Misfolding Diseases'.

Schedule 3 - Related Party Transactions

Related parties are those entities consolidated or accounted for on a modified equity basis in the Government of Alberta's financial statements.

Entities in the Ministry refers to entities consolidated in the Ministry of Enterprise and Advanced Education. Other entities outside of the Ministry relates to the remaining entities consolidated at the Provincial level.

Alberta Innovates - Bio Solutions had the following transactions with related parties which are recorded on the Statement of Operations and the Statement of Financial Position at the amount of consideration agreed upon between the related parties:

	Entities in the Ministry		Other Entities Outside of the Ministry	
	2013	2012	2013	2012
	(In thousands)			
Revenues				
Grants	$ 18,762	$ 20,144	$ -	$ -
Other	294	50	97	50
	$ 19,056	$ 20,194	$ 97	$ 50
Expenses – Directly Incurred				
Grants	$ 7,149	$ 9,006	$ 236	$ 708
Other Services	69	36	3	3
	$ 7,218	$ 9,042	$ 239	$ 711
Receivables from	$ 24	$ -	$ -	$ 1,050
Payables to	$ 259	$ 370	$ 18	$ -
Deferred Revenue	$ 4,586	$ 3,116	$ 1,950	$ 1,096
Contractual Obligations	$ 12,845	$ 3,290	$ 325	$ 297

The above transactions do not include support service arrangement transactions disclosed below.

The Corporation also had the following transactions with related parties for which no consideration was exchanged. The amounts for these related party transactions are estimated based on the costs incurred by the service provider to provide the service.

These amounts are not recorded in the financial statements. Accommodation expenses incurred by others are disclosed in Schedule 4.

	Other Entities Outside of the Ministry	
	2013	2012
	(in thousands)	
Expenses – Incurred by Others		
Accommodation [1]	$ 204	$ 207
	$ 204	$ 207

(1) The Corporation's share of accommodation costs is based on the proportion of space occupied compared to the total space occupied by all Ministries.

Schedule 4 - Allocated Costs

	2013			2012
	Expenses[1]	Expenses incurred by others[2] Accommodation Costs	Total Expenses	Total Expenses
	(in thousands)			
Program				
Administration	$ 1,668	$ 204	$ 1,872	$ 2,010
Prion & Protein Misfolding Diseases	5,300	-	5,300	5,602
Sustainable Production	2,634	-	2,634	3,583
Advancing the Bioeconomy	3,858	-	3,858	3,989
Quality food for Health	1,203	-	1,203	1,669
Ecosystem Services	1,970	-	1,970	1,859
New Investments	-	-	-	-
	$ 16,633	$ 204	$ 16,837	$ 18,712

[1] Expenses – Directly Incurred as per Statement of Operations.

[2] The Corporation receives financial processing and reporting services from the Department of Enterprise and Advanced Education at no cost. The dollar value of these services cannot be accurately determined.